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## Measuring the impact of health on work in a context of delayed retirement

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# Chapter 6

## Conclusion

The acceleration of population aging in economically developed countries is threatening the sustainability of pension systems (Bongaarts 2004) and future economic growth (Bloom et al. 2010). Higher labor force participation of older people is being advocated to mitigate the effect of population aging on the ratio of economically dependent to economically active people (Maestas and Zissimopoulos 2010; Zaidi et al. 2013; OECD 2017). Governments are encouraging longer active lives by reducing access to early retirement options and by increasing the normal retirement age (European commission 2012; OECD 2015; OECD 2017). Intergovernmental organizations are encouraging their members to bring further changes to their pension and retirement systems and are tracking their progress (OECD 2018). The effective retirement age has now been raising for over a decade in many countries (OECD 2018). More changes to pension legislations are being envisaged or phased in, putting a growing pressure on workers to extend further their careers. At the same time, we know that health deteriorates with age. Therefore, one important question is whether the fact that health deteriorates with age will form a hurdle towards higher retirement ages.

This last chapter first summarizes the results that were obtained in chapters two to five. It then discusses these results in the light of the question raised above, including a discussion of the limitations that were faced. The third part proposes further research directions and the fourth part exposes the policy implications of the present research. The fifth part of the present chapter concludes.

### SUMMARY

The question whether the deterioration of health with age is likely to form a hurdle towards longer careers was answered in four parts. The second chapter looked at the implications at the individual level. The third one served as a transition between the individual and population levels. The fourth and fifth chapters provided measures of capacity to work at the population level.

The second chapter of this dissertation looked at the association between different individual trajectories of health between ages 53-54 to 55-66 and different retirement pathways among older American workers. Most research on the impact of health on retirement so far considered health at one point in time only, most often prior to some transition from work to any non-work activity (e.g. disability pension, early retirement or unemployment) (Van Rijn et al. 2014). Such an approach ignores that change in health can also impact retirement. Also, it assumes that retirement is a permanent and unidirectional transition, which is at odds with the current theory and empirical observations. Therefore, health was modelled in the second chapter as a continuous and time-dependent process and retirement as a process that stretches over several years. The main question was how heterogeneity in individual trajectories of health lead to heterogeneity in retirement pathways. Heterogeneity in health trajectories was modelled using latent class growth analysis, a method that allows to identify different unobserved classes in trajectories of a given outcome over time. The measurement of health was based on a modified version of the work ability index. The model provided 3 trajectories: high, declining and low work ability, reaching proportions of 74, 17 and 9 percent of the respondents respectively. Heterogeneity in retirement pathways was modelled based on a typology that opposed early and late retirements as well as crisp and gradual retirements. The four retirement pathways (early-crisp, early-gradual, late-crisp, late-gradual) each had an approximately equivalent proportion in the sample. The results showed that respondents who follow a declining or a low work ability trajectory tend to retire more often via the early-gradual pathway, meaning that they retire prior to the age at which early retirement benefits are available (age 62) and make use of disability and unemployment benefits. However, respondents who follow these two

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work ability trajectories differ in the use of the early-crisp pathway, which is mostly used by people with declining work ability. In other words, many people with declining work ability seem to have just the necessary resources to keep working until age 62 and reach the early retirement age. This is less the case for people with constantly low work ability. Thus, if the American government wants to pass further amendments to social security, it must first make sure that more people enter old age with good work ability and that they can maintain it at least until the full retirement age. A failure in doing so will augment the number of people who rely on disability and unemployment benefits prior to reaching the early retirement age.

The third chapter discussed the impact of health on labor force participation at older ages for both individuals and populations. It did so by presenting visualizations that allowed to see the variation at one point in time in the proportion of people who are active on the labor market according to different values of health and of age simultaneously, between ages 52 and 69. The visualizations took advantage of the growing availability of data on objective measures of physical health gathered by the Health and Retirement Study and its sister studies, the English Longitudinal Study of Ageing and the Survey on Health, Ageing and Retirement in Europe. These measures have the advantage that they are not prone to measurement error as subjective measures of health are. Furthermore, they are measured on a continuous scale thus permitting to examine the variation in labor force participation with greater precision. Results were also presented for a measure of mental health that was obtained based on the EURO-D scale. Eight countries were examined (including two groups of three countries) at two points in time (2004-2007 and 2012-2013). The form of the link between health, labor force participation and age was found to be rather constant across countries and over time. Furthermore, it did not vary much when using different measures of health. In all cases, labor force participation varies little between people with health status near the median or above it. Among people with health status one or two standard deviations below the median, participation decreases to reach values as low as half of those of people with better health. This chapter then moved on to examine the differences in labor force participation between countries and over time, according to health and age simultaneously. The comparison between countries showed that levels of labor force participation vary between countries mostly according to age, and less so according to health. The comparison over time showed that in two countries, people who contributed the most to the rise in rates of labor force participation were those with lower values of health. These observations highlight the influence of governmental dispositions on when people retire, which have a greater power of explanation than differences in health in explaining country differences in labor force participation at older ages. It also raises questions about whether higher participation of people with poorer health is the result of desired developments (greater access to the labor market for traditionally disadvantaged people) or undesired ones (people are forced to work despite poor health due to lack of financial resources).

The fourth and fifth chapters provided population-level measures of the capacity of workers to postpone their retirement. The fourth chapter first defined a statistical model that described the relationship between physical health and labor force participation among people age 50 to 64 in fourteen European countries. Then, it proposed a simulation of a six years postponement of all the factors that determine retirement age except physical health. The result of the simulation was a measure of the difference in the number of years that people could expect working between age 56 and 75 with and without the limiting effect of declining physical health with age. Men living in an average European country could expect to work 10.75 years between age 56 and 76 if all the factors that determine retirement age—including physical health—were postponed by six years. The actual figure taking into account the fact that physical health declines with age is 10.39, a reduction of 0.36 years. For women, the value with a postponement of all factors is 9.28, and the one taking into account the decline of physical health with age is

8.73, a difference of 0.55 years. Further analyses examined the sensitivity of these results by comparing two groups of countries that differed considerably concerning the extent of the impact of physical health on labor force participation. In the so-called high impact countries, men could expect to work 11.12 years, or 0.51 years less than what would have been obtained without the limiting impact of declining physical health with age. Among women, the equivalent figures were 9.5 and 0.62 years. Despite these higher figures, decline in physical health seems not to be a major obstacle towards higher retirement ages in Europe. Therefore, this chapter concludes that the vast majority of Europeans in their 50s and 60s would be able to postpone their retirement by a reasonable number of years without having to retire due to poor physical health.

In the fifth chapter, the health capacity to work of older people was measured as the number of years that American workers could work if they only retired due to poor health. American workers born between 1936 and 1947 were followed longitudinally from age 55 until they were observed making a transition to retirement or death, or until they were lost to follow up or reached age 70 without retiring. Applying the Andersen et al. (2013) method, a distinction was made between retirements due to poor health and retirements due to any other reason. The sum of the number of years spent working and the number of years lost to retirement due to any other reason was defined as the capacity to work, or the number of years that people could work between age 55 and 69 assuming that they only retire due to poor health or death. The results showed that during the 15 years of observation, workers could have spent 12.9 years working. This figure is 61% higher than the 8 years that workers were actually observed working. Further analyses however found significant disparities between groups in terms of capacity to work. For example, people with at least some college degree had a capacity to work that is more than 2 years higher than the one of people with no high school degree, and managers have a capacity to work that is 1.7 years higher than the one of manual workers. These differences were mostly due to different number of years lost to retirement due to poor health between these different groups. Finally, we saw that younger cohorts (born 1940-1947) worked longer than the older ones (born 1936-1939) albeit without significant improvement in capacity to work. This resulted in a larger number of years lost to retirement due to poor health among the younger cohorts, thus raising equity concerns between generations facing retirement.

## DISCUSSION

Is the fact that health deteriorates with age likely to form a hurdle towards higher retirement ages? At the light of the evidence summarized above, the answer is no. As shown in Chapters four and five, the vast majority of people in Europe and the United States could postpone their retirement by a fair amount of years without being forced out of the labor market due to poor health. In the fourth chapter, the impact of declining physical health with age on a six years postponement of retirement lied between 0.25 and 0.51 years for men and between 0.44 and 0.62 years for women. Put differently, 96 to 97 percent of men and 94 to 95 percent women in Europe would be able to postpone their retirement by six years without being forced to retire due to a deterioration of their physical health. In Chapter five, we saw that in the United States, men and women could work 12.9 years out of the 15 years comprised between age 55 and 70. That is, more than 75 percent of men and women could keep working until at least age 70 without having to retire due to poor health. The figures are not directly comparable due to the different methodologies employed to arrive at them. However, both point towards a moderate limiting effect of poor health on an eventual career extension.

## Conclusion

The question of whether older workers have the capacity to work longer has been previously documented using related methods. The results were similar to those obtained here. Analyses following the Milligan and Wise (MW) method (Milligan and Wise 2015; see Chapter 1) performed in different economically developed countries found that between 50 and 70 percent of men in France, Germany, Italy, France, Spain and the United States could reach the age of 70 while still working (Coile 2017a). In countries such as Canada, Denmark, Japan and the United Kingdom, this figure reached 80 to 85 percent. Authors who followed different methods arrived at similar conclusions. The Cutler – Meara – Richards-Shubik (CMR) method (Cutler et al., 2013; see again Chapter 1) applied to the same group of countries allowed to conclude that between 65 and 90 percent of men and women age 65 to 69 years old are capable to work (Coile et al. 2017b). More simple analyses arrived at similar conclusions. Reynolds and Crimmins (2010) used data on self-assessed limitations in the amount of work that older Americans can perform and found that up to 79 percent of men and women age 69 were not bothered by any such limitation in 2007.

Three distinct mechanisms help explain the fact that there is substantial unused capacity to work at older ages. First, although physical health follows at the aggregate level an important decline with age, the decline is moderate if taken over a limited number of years such as between ages 55 and 70. As shown in Chapter 1, decline in health as measured by physical and self-assessed health as well as number of conditions or hospital overnight stays is moderate below age 70 (although it tends to accelerate above age 70). In Chapter 4, we saw that the decline in physical health (as measured by grip-strength, the chair stand test and peak expiratory flow) was rather mild between ages 50 and 64. Similarly, Cutler et al. (2013) explained their finding that capacity to work was substantial among Americans in their 60s by the fact that “until age 70, health appears to decline very slowly” (p.20). Other analyses showed that about 17 percent of American men and women age 62 declare to be bothered by a health problem that limits the amount of work that they can do; this proportion only grows to 21 percent among men and women age 69 (Reynolds and Crimmins 2010).

Second, although there exists important variation among individuals, most people in their 50s and 60s are in good health. This observation was well illustrated in Chapter two by the fact that between ages 53-54 and 65-66, close to 75 percent of American workers manage to maintain a high level of work ability as measured by a modified version of the work ability index (De Zwart et al. 2002). Furthermore, as shown in Chapter 5, although retirement due to poor health does occur, it concerns only about one worker out of five in the United States. Similarly, previous work showed that usually no more than five percent of people age 50 to 64 years old receive disability benefits, which let suppose that most of the remaining people are capable to work (Stattin 2005; Börsch-Supan 2011).

Third, though health clearly has a significant effect on the propensity of people to be active on the labor market, not everyone with poorer health is inactive. As shown in Chapter 2, older workers with poor or deteriorating work ability tend to stop working earlier. Still, about one third of them manages to keep working until age 65 or older. The visualizations presented in Chapter 3 also made this mechanism clear. We saw that people age 52 to 54 with values of physical health below two standard deviation had a labor force participation that reached values between roughly 40 and 60 percent. Although these values are clearly below the ones of people with better physical health (who reached values above 80 percent), they are also far from null. Furthermore, people with values of health below two standard deviations are by definition few in the population. Previous research also found a limited impact of poor health on work. For example, Wubulihasimu et al. (2015) found that a 10% change in disability incidence in an average European country causes a change of only 0.04 years in working life expectancy.



These results should however not overshadow the fact that for some people, poor health may well constitute an obstacle towards longer economically active lives. As shown in Chapter 5, older Americans without a high school degree can expect to be capable to work during less than 12 years out of 15 between ages 55 and 69. For people with at least some college degree, this figure reaches almost 14 years. A similar but somewhat smaller discrepancy can be found between managers and manual workers. This differential impact of poor health on work is not new. Already in 1989, Heyward and colleagues noted that clerical and service workers “exhibit higher than average rates of disability, and managers evidence a lower than average rate” (p.440). More recently, Carriere and Galarneau (2012) used Canadian data to show that people with less than a high school diploma loose more years of working life due to involuntary retirement (including mostly retirements due to poor health) than people with at least a high school degree. In their calculations of the change in the proportion of people who rely on disability benefits supposing a postponement of retirement by three years, Cutler et al. (2013) find large rises among blacks and people with less than a college degree but not among whites and people with at least a college degree. Rehkopf et al. (2017) find a proportion of people age 55 to 74 that are capable to work that is almost three times as high among people with a high school degree compared to that of people without a high school degree. These important disparities are in part attributable to differences in the level of health of these different groups. However, differences in the working conditions and work demands probably add up to form an even bigger burden on the less educated.

This dissertation also found evidence that there may exist important disparities between countries in the amount of unused capacity to work at older ages. In Chapter 4, we saw that there was a considerable gap between the so called low- and high-impact countries in the size of the impact of physical health on a six years postponement of retirement. Although the effect remained small in both cases, it varied two-fold among men and by an approximately 1.5 factor among women. The main difference between these two groups of countries was that labor force participation among older people prior to the simulation was much higher in the high-impact countries. This implies that a six-year postponement of retirement was taking place at higher ages among the high-impact countries compared to the low-impact countries. Since the deterioration of physical health tends to accelerate with age, this resulted in a bigger impact on the capacity for people to postpone their retirement in the high-impact countries. Also, in Chapter three, we saw that the rise in labor force participation over a period of approximately seven years was not always equally distributed among people with different levels of health. While in some countries it was people with lower levels of health who contributed more to the rise, in other countries the raise was more equally spread out. Such an inter-country variation in capacity to work was also found in Milligan and Wise (2017; see above the results obtained using the CMR method). Therefore, policy may play an important role in the capacity of older people to postpone their retirement.

### **Limitations**

The research reported in the present dissertation had to face some limitations. These can be broken down into two groups. The first set of limitations concern the fact that throughout this dissertation, the factors that enable people to work (i.e. health but also the other personal and work characteristics) were all assumed to be constant over time. The second set of limitations concerned the fact that despite using what was to our knowledge the best available methods and data, the measures of work ability and of capacity to work utilized here had some degree of imperfection. We discuss each set of limitations in detail.

*What levels of work ability are to be expected in the future?*

## Conclusion

Throughout the whole of this dissertation, health was assumed to be constant over time. The question of whether health is improving over time is still largely unresolved. Most studies agree that the proportion of life spent with chronic conditions is expanding, in Europe as well as in the United States (Chatterij et al. 2015). Many studies found a reduction in the time spent in bad health as measured by functioning (Chatterij et al. 2015) but other studies found an expansion of the proportion of life spent with mobility limitation (Crimmins and Beltran-Sanchez 2011). Coile et al. (2017b) documented a decline in the share of people with poor or fair self-assessed health between the 1970s and 1990s in the United States. However, it is less clear whether there was such a decline between 2000 and 2015. Studies documenting change in objective measures of physical health over time are still lacking. Such measures of health were all found to significantly predict retirement timing (van Rijn et al. 2014). If the proportion of people with adverse health outcomes between age 50 and 70 increases in the future, the figures of capacity to work presented here could turn out to be smaller than expected. As noted by Reynolds and Crimmins (2010), more adverse health outcomes could be triggered by higher levels of obesity among younger cohorts, or by higher levels of mental health complaints.

Other factors are clearly evolving in favor of a higher capacity to work in the future. Younger cohorts are more and more educated (Samir et al. 2010). Higher education is linked not only to better health, but people with higher education also have less physically demanding jobs and are more skilled, thus favoring better work ability (Ilmarinen 2001). Cognition among older people is also showing signs of improvements even when controlling for the inter-cohort change in education (Bordone et al. 2015). We reviewed above the finding that capacity to work is significantly higher for people with higher education compared to people with lower education. Hence, higher levels of education in the future might play in favor of higher capacity to work.

Another set of factors that were assumed to stay constant over time concerns the work demands. We saw in Chapter 1 that work ability is influenced by the mental and physical demands of work, but also by the work environment and work community. It is not clear what trend these work-related factors will follow in the future. Although there is agreement that work is becoming less physically demanding over time (Johnson 2011), it seems plausible that the mental demands are increasing. In the meanwhile, many countries are encouraging employers to adapt their work environment to better accommodate people with disability (OECD 2010). The rise in work from home may also play in favor of better access to the labor market for typically disadvantaged people. Lower work demands and better work environments might allow more people with lower levels of health to work, thus having a positive impact on the capacity to work of populations.

On the other hand, high mental demands mean that a large share of people deals with mental health complaints at some point in their career, including professional burnout. Poor mental health has consistently been found as one of the main predictors of early retirement (Van Rijn et al. 2014). A specificity of mental health is that it can be greatly affected by the work demands and work environment. This is shown by the fact that retirement has often a beneficial effect on the mental health of workers with prior mental health complaints (Van der Noordt 2014). Therefore, future trends in the mental demands of work could play an important role in determining future capacity to work because it affects both the work-side and the human resources-side of the work ability equation.

### *Measuring capacity to work*

Work ability (Chapter 2) and capacity to work (Chapters 4 and 5) were measured in this thesis relying on both objective and subjective measures of health. Subjective measures of health included self-rated health, self-assessed limitations in the amount or quality of work and self-



assessed reason for having retired. These measures are subjective in the sense that they rely on respondents' judgement and a given value of subjectively measured health may not have the same underlying value of health between two persons. Objective measures of health included grip-strength, the chair-stand test and peak expiratory flow. These measures are obtained using devices and do not rest on the respondent's judgement. More measures can be labelled as objective even though they were collected via questions to survey respondents. These included the score on the CES-D or EURO-D depression scale, number of conditions and the number of hospital overnight stays. These are clearly more objective measures of health since they are collected using a standardized questionnaire in the case of the depression scales or refer to tangible concepts in the case of the number of conditions or of hospital overnight stays.

Relying on subjective measures of health in the measurement of the impact of health on retirement may be problematic due to the possible presence of endogeneity between the measure of health and the retirement decision. In Chapter 2, analyses rested on five different measures, including two subjective ones (self-assessed health and self-assessed limitations in the amount or quality of work). The undesirable effect that these measures may have had on the validity of the outcome was however dampened by the fact that they were combined to three other objective measures of health and by the analytical strategy used. Indeed, using latent trajectory modeling over several waves may have neutralized the short-term effect that retirement may have on self-assessed health. The use of self-assessed reason for having retired in Chapter 5 potentially had a bigger influence on the results. It is not yet clear what considerations a person considers when assessing the role of poor health in the retirement decision. A plausible hypothesis is that a person who retires at age 60 is more likely to report that poor health played an important role than a person who retires at age 67 with the same health, the latter contending that it is more socially acceptable to retire later. This hypothesis would be in line with the justification hypothesis, which states that early retirees make a worse assessment of their health than what objective measurements suggest. Although empirical support was provided for the justification hypothesis concerning self-rated health (Kalwij and Vermeulen 2008; Lindeboom and Kerkhofs 2009), we are not aware of any work that assessed its role concerning the self-assessment of the reason for having retired.

The analyses presented in Chapter 4 were based exclusively on objective measures of health and therefore were not subject to the bias described above. The measures used (grip-strength, the chair-stand test and peak expiratory flow) can be modelled conveniently and cover a broad range of physical outcomes. However, these analyses did not assess the impact that other health outcomes such as mental health may have on capacity to work. As discussed above, mental health has an important impact on the capacity of people to continue working at older ages, and this impact will likely grow in the future. In fact, although the results are not directly comparable because of the different approaches used, the results presented in Chapter 5 seem to suggest a much bigger impact of health on a potential postponement of retirement than the results presented in Chapter 4. One main difference in the two approaches is that the former considered the global impact of health, while the latter considered the impact of physical health only. Therefore, an important share of the difference is likely explained by non-physical aspects of health, such as mental health. We discuss further the impact of mental health on capacity to work in the next section.

### **FUTURE RESEARCH DIRECTIONS**

As discussed in the introduction, although research on work ability and the determinants of early retirement dates back to at least the 1980s, research on estimating the capacity to work of populations seems rather recent. In this section, we first discuss how future research on work

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ability and the determinants of early retirement could benefit from relying on a more dynamic framework. Then, we discuss how research on estimating the capacity to work of populations can further expand and improve.

Research in occupational health has provided important insights into the factors that influence work ability and that lead to early retirement. It showed that most chronic conditions, musculoskeletal problems and mental health problems all influence negatively work ability and lead to early retirement. It also showed that self-assessed measures of health are also predictors of early retirement, although the direction of the causality is more difficult to assess. Previous research also showed that work related factors are closely linked to work ability and the early retirement decision. Namely, the kind of position held by an employee, the amount of control over his or her job and the amount of physical and mental demands were shown to have a strong link with work ability and the decision to retire early. Chapter two raised the fact that most studies that found such links considered health and retirement at one or two points in time only. This results in a simplified picture of the relationship between health, work and retirement. Such a framework makes it for example impossible to determine whether change in health rather than prolonged poor health induces early retirement. Likewise, it is possible that change in work demands (change in tasks, change in number of hours worked) significantly affects someone's work ability over time. Future research should therefore adopt a more dynamic research framework to unravel more complex determinants of work ability and retirement.

Studies that aimed at identifying individual determinants of work ability and early retirement are ill-designed to answer the question of whether populations are physically and mentally able to have longer working lives. Studies from Milligan and Wise (2015) and Cutler et al. (2013) recently provided interesting tools for answering this question. The application of these methods to a dozen of countries provided a global overview of the present situation (Wise 2017). An interesting feature of this work is that results can be presented in the form of the number of years that people could expect to work under specific assumptions that relate to the association between work and health. This feature was exploited in Chapter 4 and 5 of the present dissertation. Chapter 4 presented a measure of the number of years that people could expect to work supposing a six years postponement of retirement taking into account the limiting effect of deteriorating physical health with age. Chapter 5 presented a measure of the number of years that people could work between ages 55 and 69 supposing that people only retire due to poor health. This chapter also showed the usefulness of such an indicator in comparing population subgroups. In the context of increasing pressure to delay retirement, such measures will provide useful for tracking change in capacity to work over time and between populations. This can be done in future research by taking advantage of the growing availability of micro-data on the health and retirement of older people provided for example by the Health and Retirement Study and its sister studies (HRS 2017).

Because capacity to work is not a directly observable phenomenon, its assessment forces the analyst to make assumptions regarding the statistical associations in the model used. The MW method supposes that mortality is a good proxy for work ability over time, but research has shown that mortality and health do not necessarily evolve hand in hand. An important assumption of the CMR method is that the relationship between health and work captures well individual ability to work in a given age range (e.g. from 50 to 54 years old) and that this relationship remains the same at older ages (e.g. from age 55 to 74). A similar assumption was made in the model presented in Chapter 4 of the present dissertation. The method used in Chapter 5 made for its part the assumption that people with same work ability but of different ages are equally likely to report that they retired due to poor health. More research can aim at determining whether such assumptions are realistic and at developing methods that do not rely on such restrictive assumptions.

Rehkopf et al. (2017) used a similar framework as the one proposed by the CMR method but applied it to project future capacity to work instead of looking at the present or past situation. Similarly, Chapter 4 was interested in determining capacity to work in a hypothetical, future scenario. Any population projection is notoriously difficult as it forces the researcher to make assumptions concerning how different factors will shape the future. Projections can be improved by taking more factors into account, or by allowing them to change over time in order to reflect some changing reality. Projecting future capacity to work should be no exception. As Rehkopf et al. showed (2017), scenarios can be established to reflect possible changes in health thereby assessing its impact of capacity to work. Future research could expand this framework by integrating scenarios of change in demands and composition of work in their projections. It is for example well established that the physical demands of work are in general diminishing (Johnson 2011). The trends are less clear concerning the mental demands, but research in this direction could prove crucial as professional burnout and mental health complaints are an important cause of sickness absences in developed economies. Not only higher mental demands require higher mental capacities but long exposure to high mental demands probably also affect negatively someone's mental capacities. Correctly assessing whether people are capable of longer working lives will therefore edge on a good understanding of the link between mental health and mental demands of work.

### **POLICY IMPLICATIONS**

Since the end of the 1990s, there is a strong agreement among governments that people should work longer to mitigate the negative effect of population aging on public finances and economic growth. When taking measures aiming at encouraging longer careers, governments have been assuming that people are physically and mentally able to realize longer careers. The finding that the deterioration of health with age should not form an important hurdle towards later retirements means that people are likely to respond to policy changes as expected. That is, people are likely to retire later without having to rely on disability or other benefits to bridge the gap to the official retirement age. This is good news for public administration as people will contribute longer to retirement schemes and receive benefits during fewer years.

The prospect of longer careers can be good news for many individuals too. Longer active lives provide a higher income for a bigger number of years, thus improving the financial well-being of retirees. Being economically active allows people to stay socially connected and improve their sense of purpose. Furthermore, work has been shown as having a beneficial effect on workers who have good health and who wish to continue working (van der Heide et al. 2013).

Some points will however require some attention by decision makers. First, although it seems feasible for most people to postpone retirement by a moderate number of years, too high targets may prove more difficult to reach. If all the factors that determine work ability stay constant over time, we contend that most people are physically and mentally capable to work until their late 60s. Any target that would lie beyond 70 years old would probably produce less desirable outcomes as the health of many people starts to deteriorate faster at this age. As a side note, population aging is forecasted to stop or at least slow down before the middle of this century in most economically developed countries. Therefore, one can question whether further increases in the official retirement age will be needed.

A second point that will require attention by decision makers is the fact that postponing retirement may be a problem for some individuals. As previously exposed, older workers with lower education and who accomplish more strenuous jobs may be more at risk of being forced into retirement before reaching the official retirement age. Improving the work ability of these

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workers will be crucial to offer them equal chances of reaching the retirement age while still working. As shown in Chapter 2, good work ability must be promoted early in the life course as people who enter the latter part of their career with an already low work ability are more prone to leave the labor market before the official retirement age. Since people with higher education typically have better work ability, one way to reach that target could be by offering workers more training and learning opportunities during their careers. However, differences in work ability will probably persist due to the different work demands attached to different kinds of jobs. Retirement policies that would implicitly consider these differences are often discussed. Future research could help informing this debate by providing measures of capacity to work of different population subgroups as presented in Chapter 5.

## CONCLUDING REMARKS

The present dissertation showed that for most people in Europe and the United States, poor health will not prevent people from working well past age 65 in the future. Most people in their 50s and 60s are healthy, and poor health does not always equal being retired. At the same time, there remains people, for example with lower education, who might have difficulties in fulfilling longer working lives. Thus, a challenge will be to address the inequalities in the capacity for people to extend their career. Right now, more is being done to encourage people to extend their career. In some countries, future normal retirement ages will lie beyond 70 years old. Also, many countries are linking future changes in the normal retirement age with future changes in life expectancy. An important question will therefore be to determine whether people's health capacity to work changes together with life expectancy. If this proves not to be the case, then more and more people will have to retire due to poor health, thus raising new questions concerning intergenerational equity in retirement. Finally, it will be important to keep monitoring how poor health impacts retirement timing and to pay attention to whether certain health complaints (e.g. mental illnesses) are increasingly causing work incapacity.

